ANL Pixel Module Activities

Jessica Metcalfe
Argonne National Laboratory

Overview

Status Report:

- Glue studies
- Wire bonding
- Quad module flex
- Test box
- HVCMOS
- Test beam

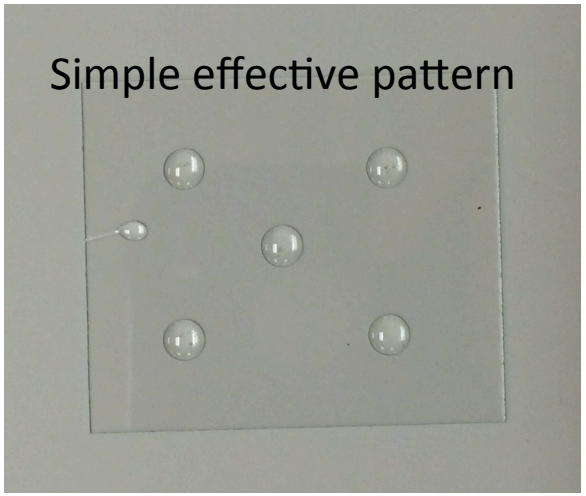
Glue Studies

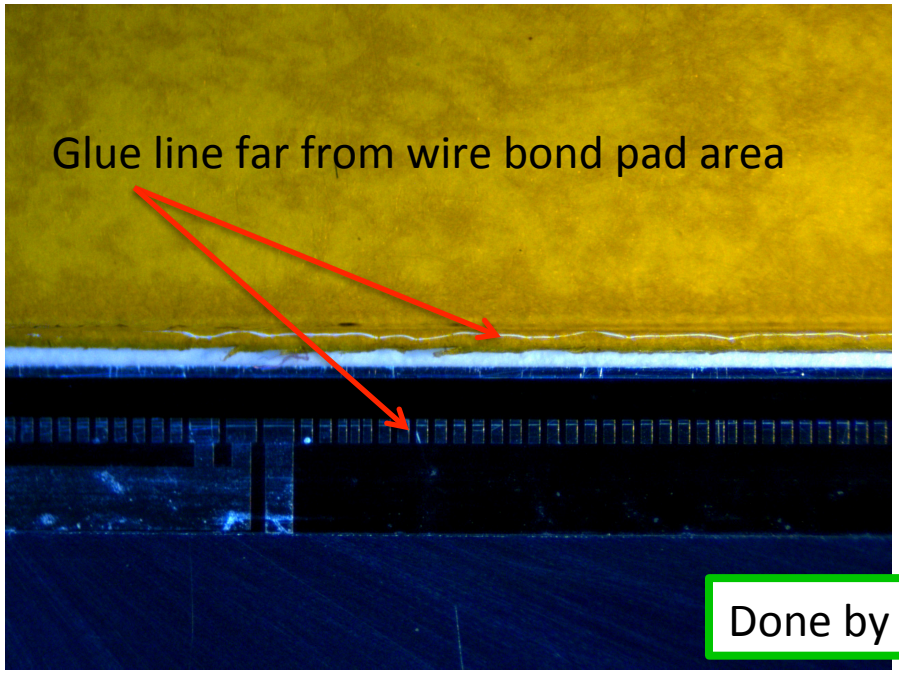
Investigating different glue methods:

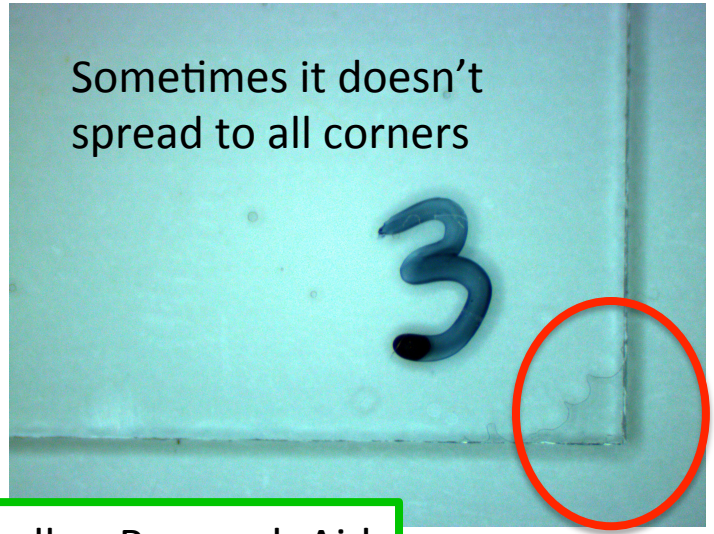
- Automatic glue dispenser
  - Program glue line/dot configuration
  - Dummy glass and kapton
- Double-sided epoxy tape (used in IBL)
  - More challenging for wire bonding, can rework

Plans:

- Pull/shear tests
- irradiations



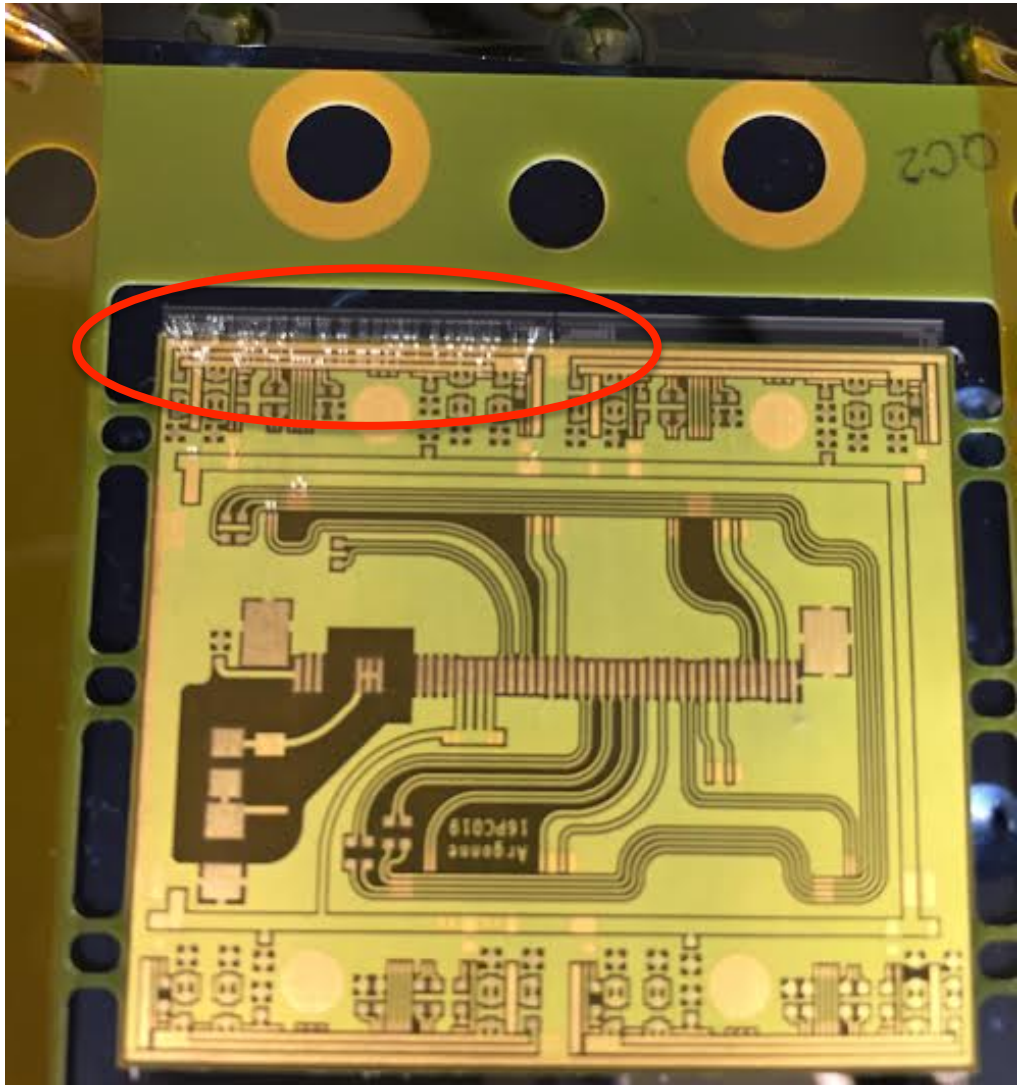


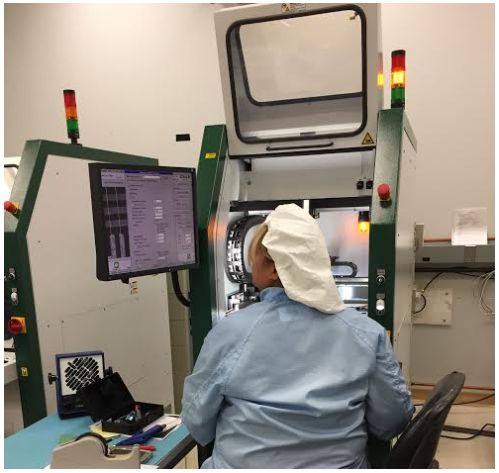


Done by Marybeth Beydler, Research Aid

Wire bonding

- First dummy sample wire bonded
- Some difficulties encountered
  - Wrinkles in flex cable

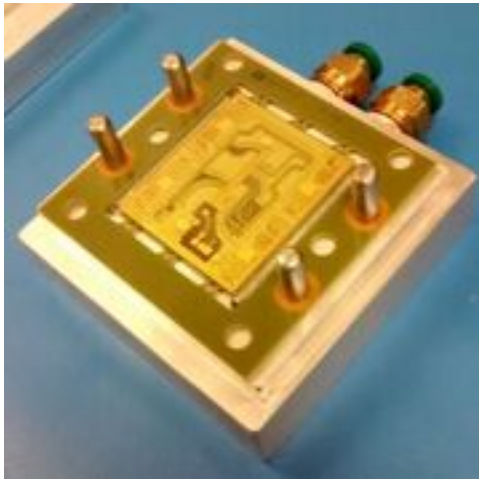


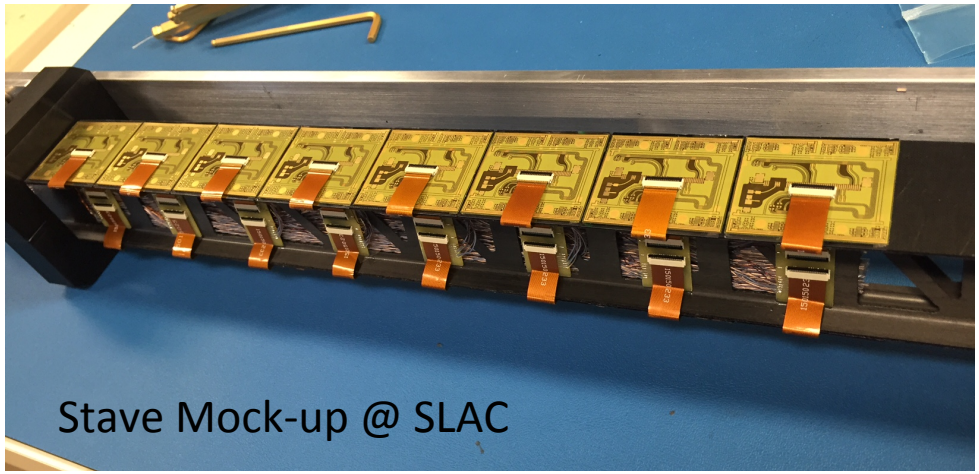


@ SiDet Fermilab until we purchase a new wire bonder

Quad Module Flex

- Originally ordered 30 flex cables
- Used most in I-beam stave mock-up at SLAC
  - Work done by Matt Zhang, ASC fellow UIUC
- Ordered 100 more
  - Mechanical mock-ups
    - **Let me know if you'll need dummy modules**
  - Glue studies
  - Testing the design
    - Plan to do next iteration of the design early next year
      - Fix any issues
      - 2 layers
      - HV hole
      - LV power tab
      - Smaller connector





Stave Mock-up @ SLAC

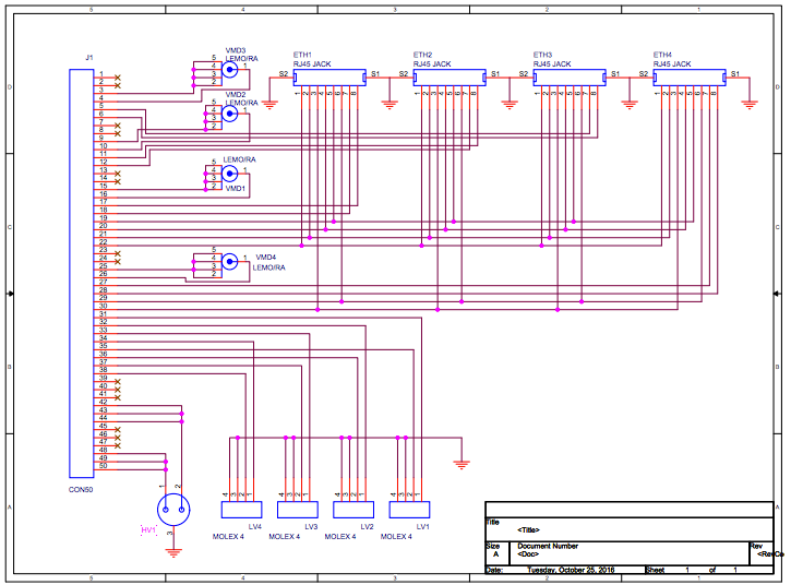
Test box

Test box is almost ready

- Cold plate with vacuum suction
- Nitrogen flow through the box
- Light tight
- Removable service plates

Adapter card

- Connect between quad module flex and read-out systems
- Design finished
- Sent for fabrication soon



Done by Matt Zhang (ASC fellow), Todd Hayden (ANL electronics)

HVCMOS

Plan

- Get involved with testing the AMS HVCMOS design
- Do gamma irradiation studies
- Organize test beam at Fermilab

Test beam @ Fermilab

Fermilab test beam: http://ftbf.fnal.gov/

- Available almost anytime next year
- Pixel telescope and support available
- climate controlled area, gass available
- Primary beam is 120 GeV protons
- Secondary beam can be pions, muons, or electrons down to 1 MeV
- 1-300 kHz

Backup

Backup